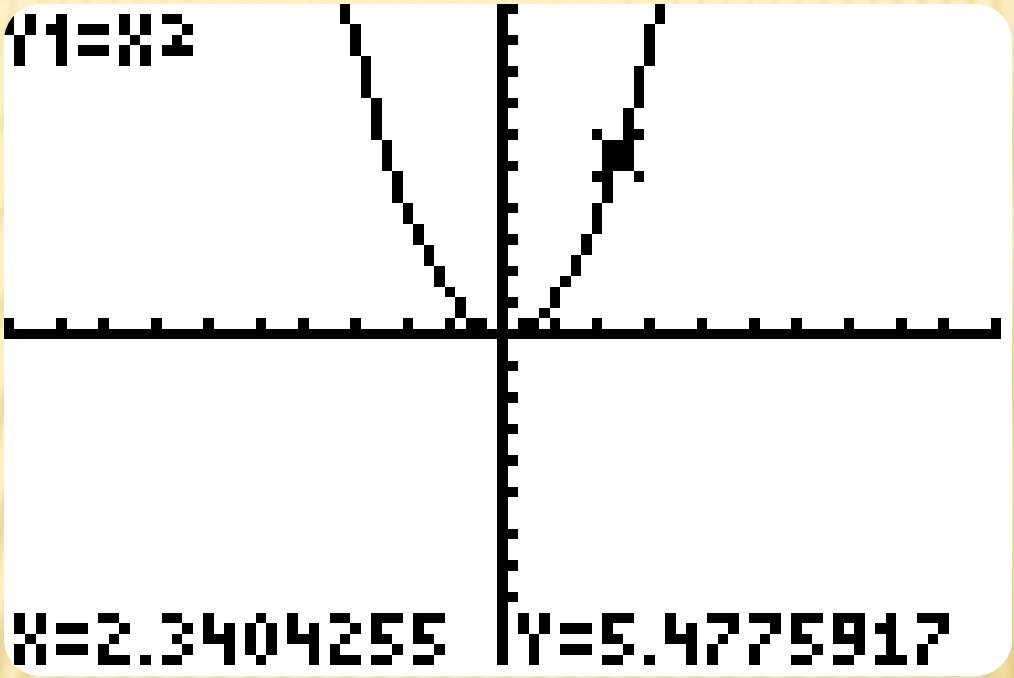
STEP-BY-STEP INSTRUCTIONS TO FIND THE VERTEX OF A CUPPED UP OR CUPPED DOWN PARABOLA (WITH A TI-83+ OR TI-84).



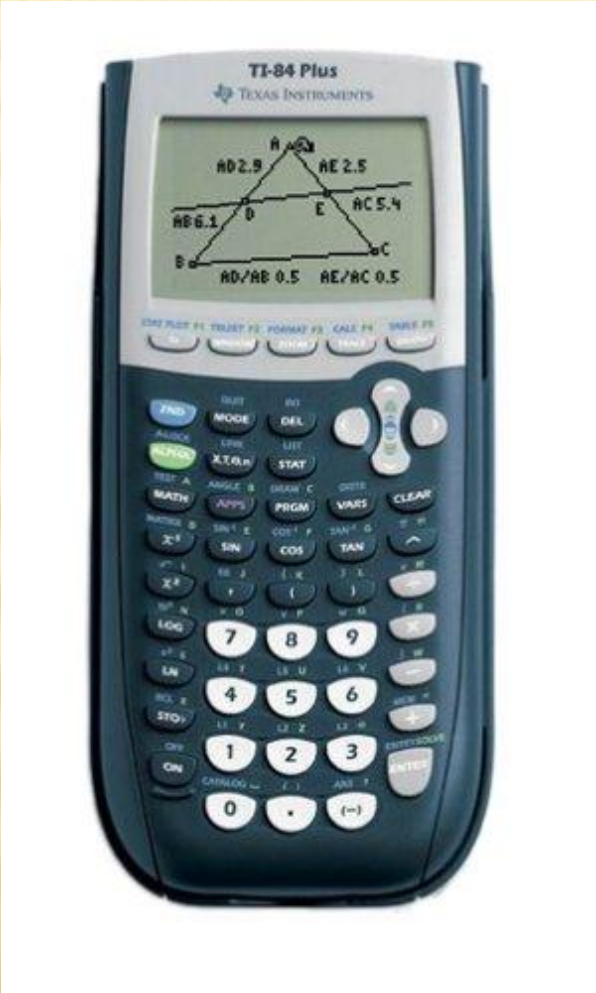
By Raul Flores, Taylor Hopkins, Fabiola Martinez.

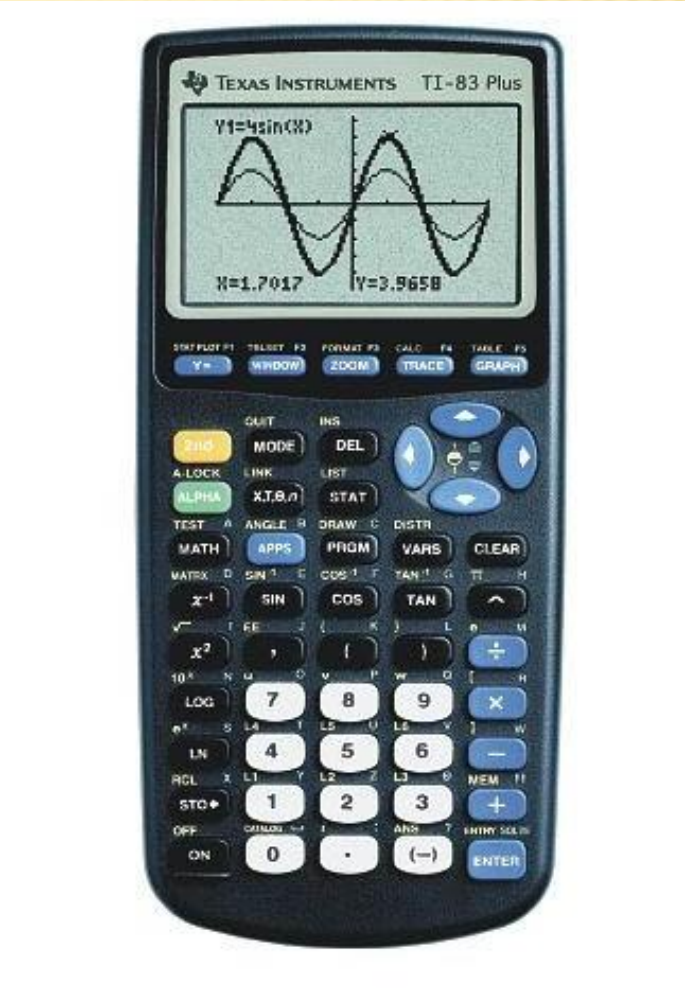
MANY STUDENTS HAVE TROUBLE WITH FINDING THE VERTEX OF A PARABOLA ON PAPER

- We are going to make it a little easier for them by showing them how to find the vertex on a graphing calculator.
- Parabola is the “U” shaped graph that you get when you graph an equation that has X to an even exponent.
- The vertex is the highest or lowest point of a parabola.

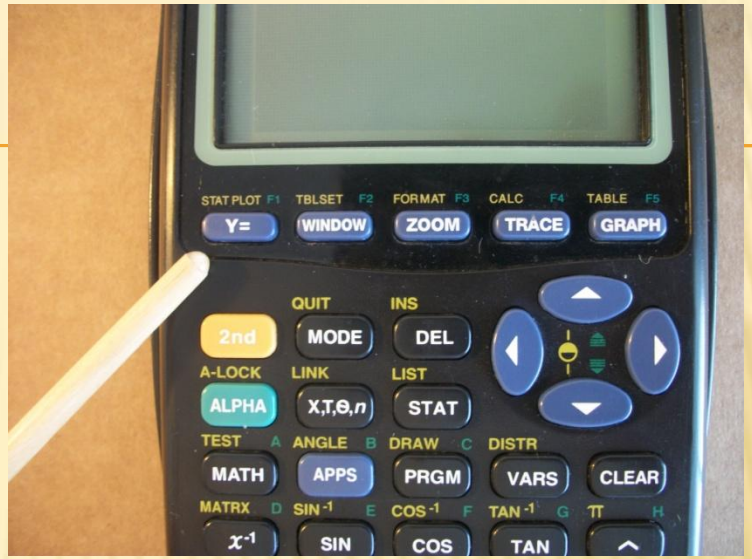
THE FIRST THING IS TO GET YOUR TI-83 OR TI-84

AND TURN IT ON.

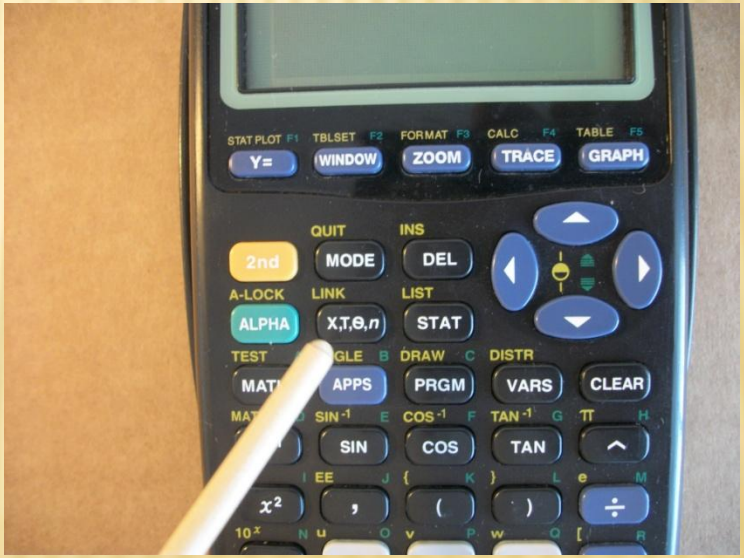




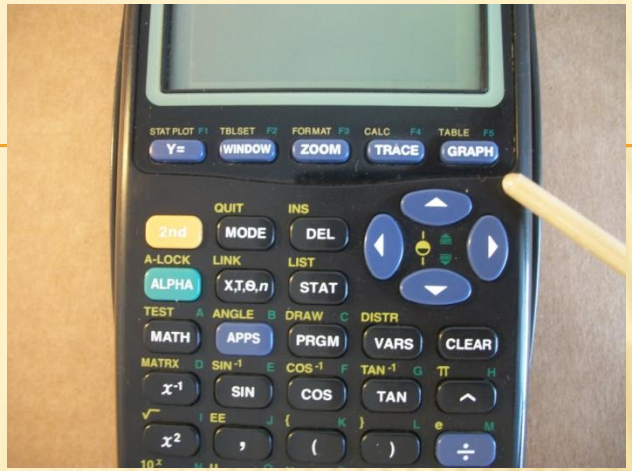
- Now go to the “Y=“ button.
- Punch in your equation Ex. $Y_1 = X^2$



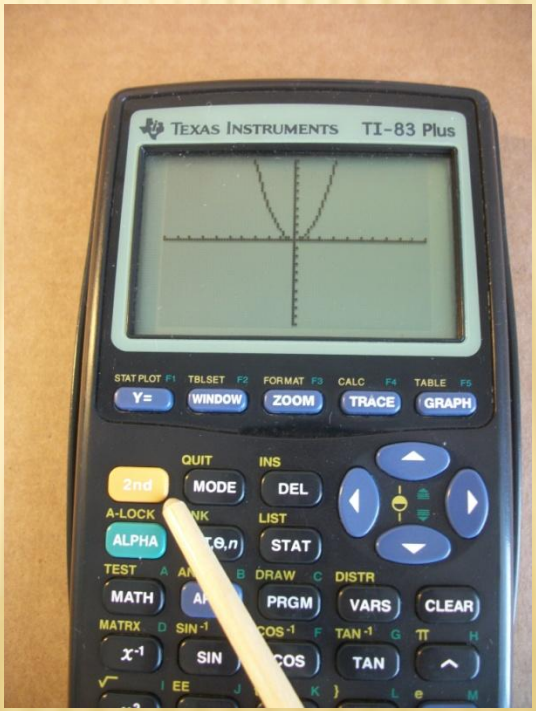
- Note: To punch in X, go to the “X,T, Ø, n” button.



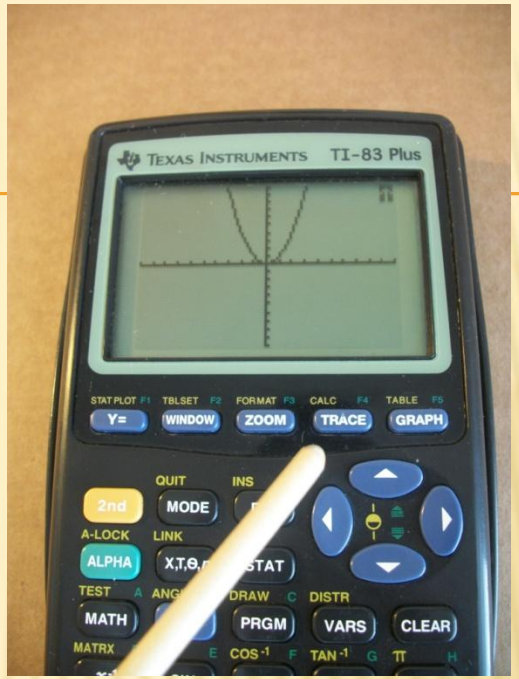
- Go to the “GRAPH” button.
- Since the equation is positive, the parabola will be cupped up.



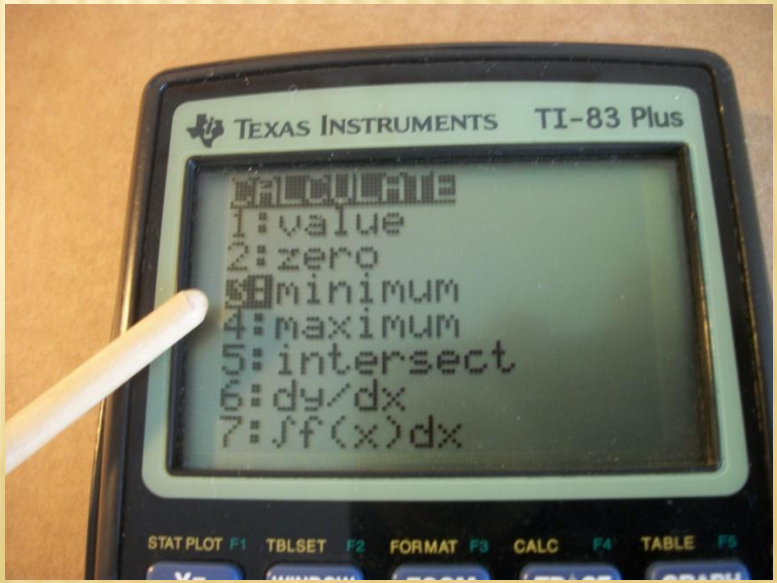
- When the parabola pops up hit the “2nd” button



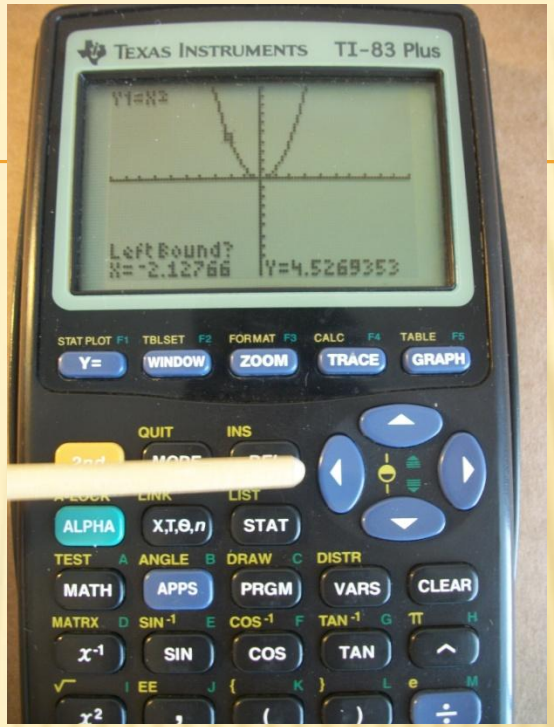
- Now hit “TRACE”.



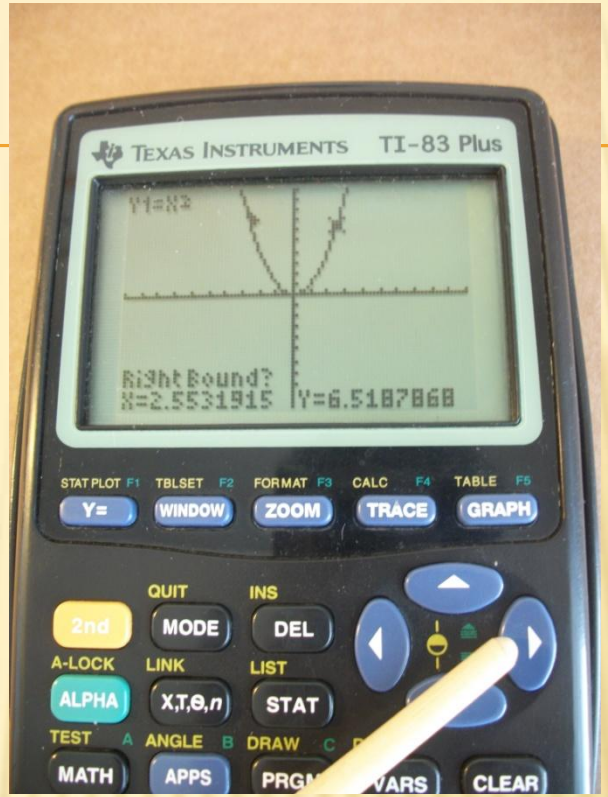
- In this screen you will go down to #3, or “minimum” because this parabola is cupped up and you are trying to find the lowest point. Then hit “ENTER”.



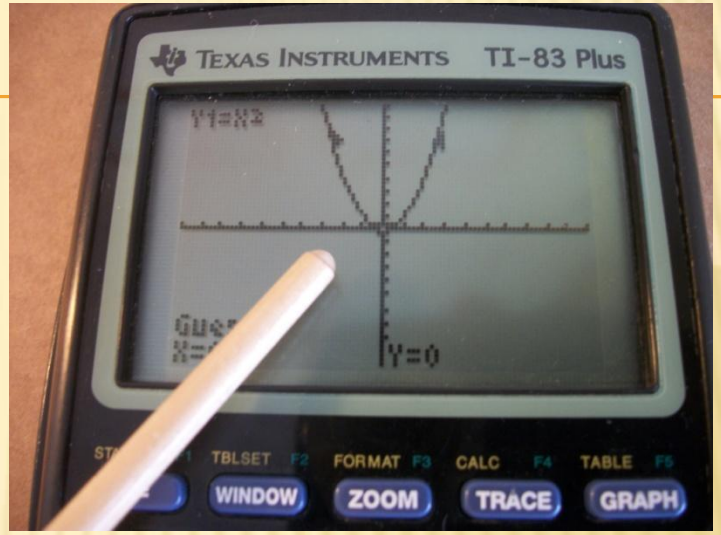
- The calculator will then ask you to pick your “Left Boundary”.
- Using your left arrow, move the cursor to the left of its starting point.
- Note: The cursor is the blinking box on your screen.
- Now hit “ENTER”.

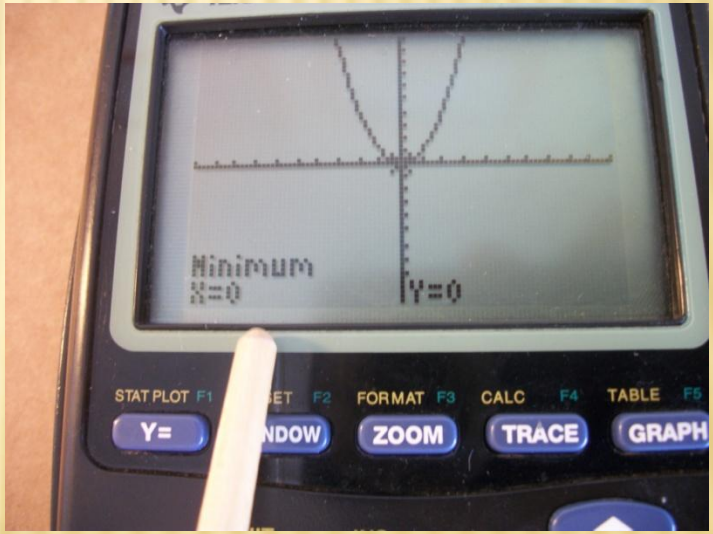


- Now the calculator will ask you to pick your “Right Boundary”.
- Move the cursor to the right side of the vertex and hit “ENTER”.

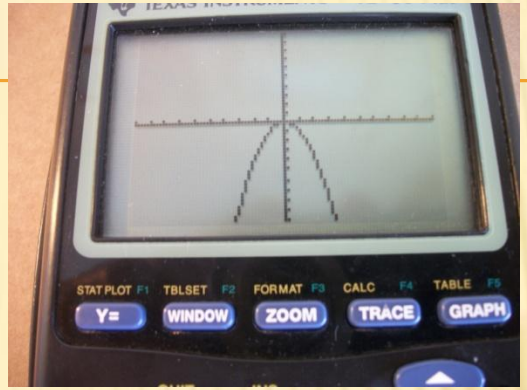


- Now “Guess” where the minimum is by moving the cursor as close to the vertex as possible and hitting “ENTER”.
- The Calculator will then give you the minimum point of the cupped up parabola in X and Y values.
- The minimum is (0,0).



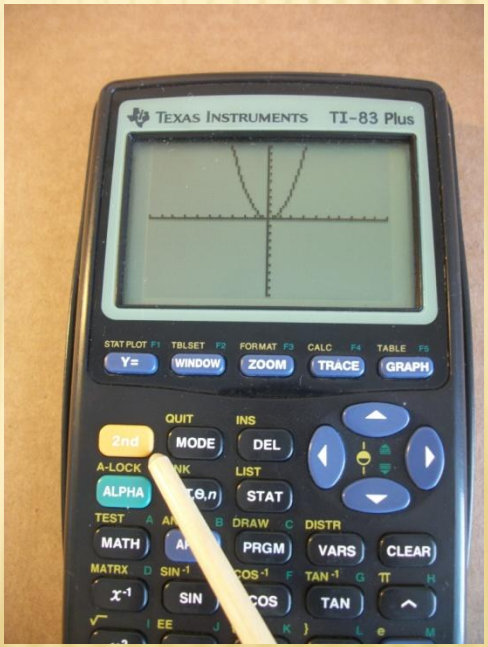


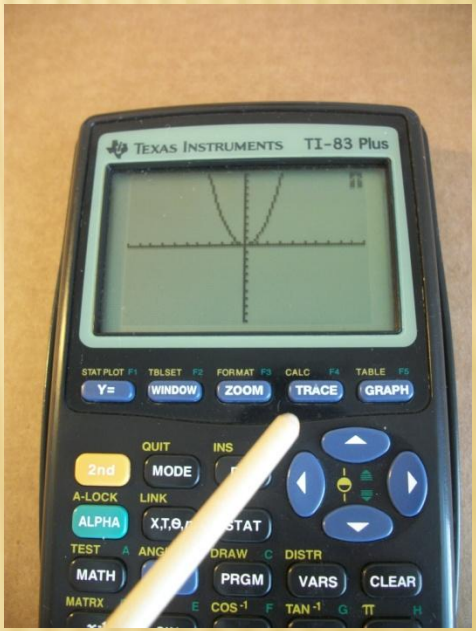
- If you have a negative function like $Y_1 = -X^2$ the parabola will be cupped down.



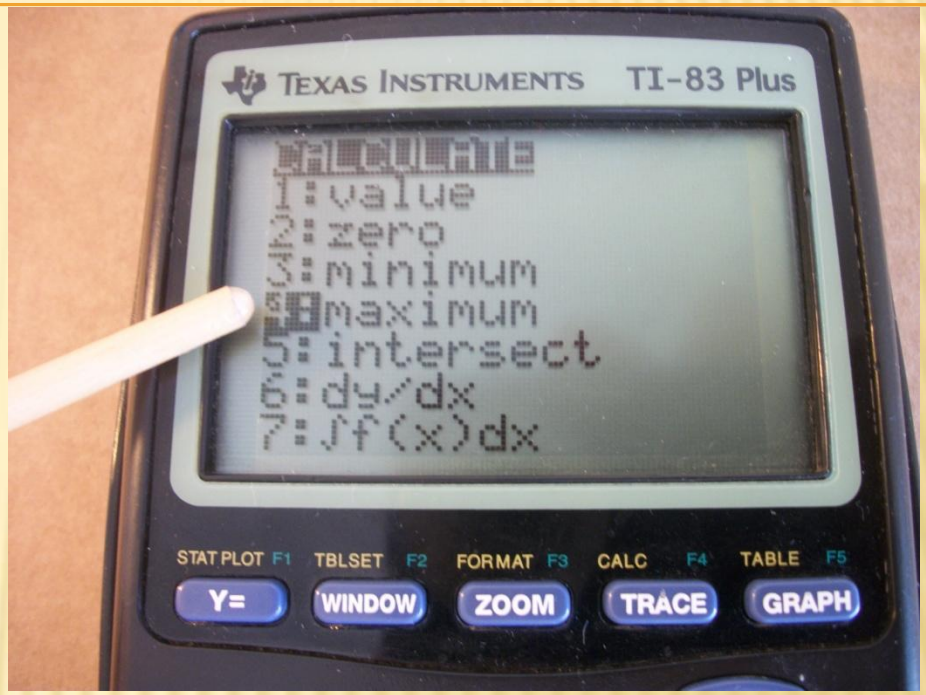
- In this case you will hit the "2nd" button.

- Then hit "TRACE".

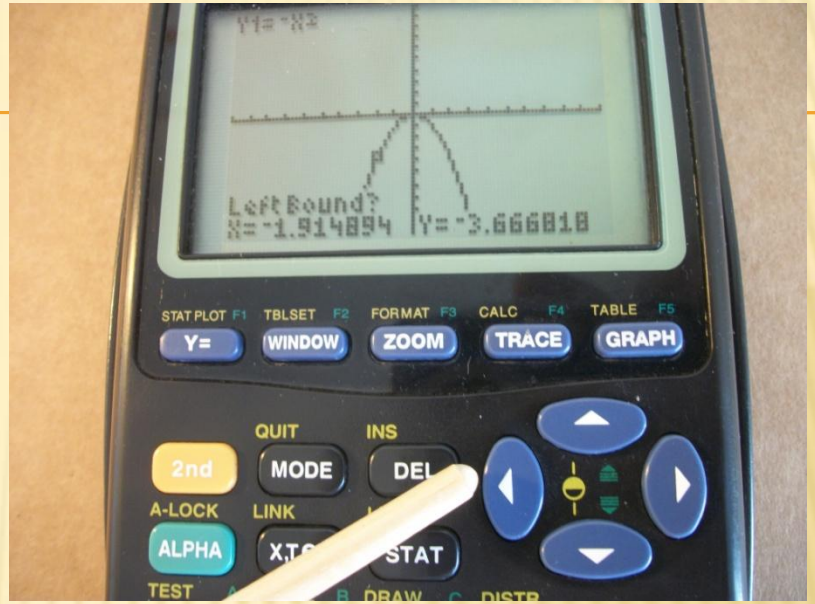


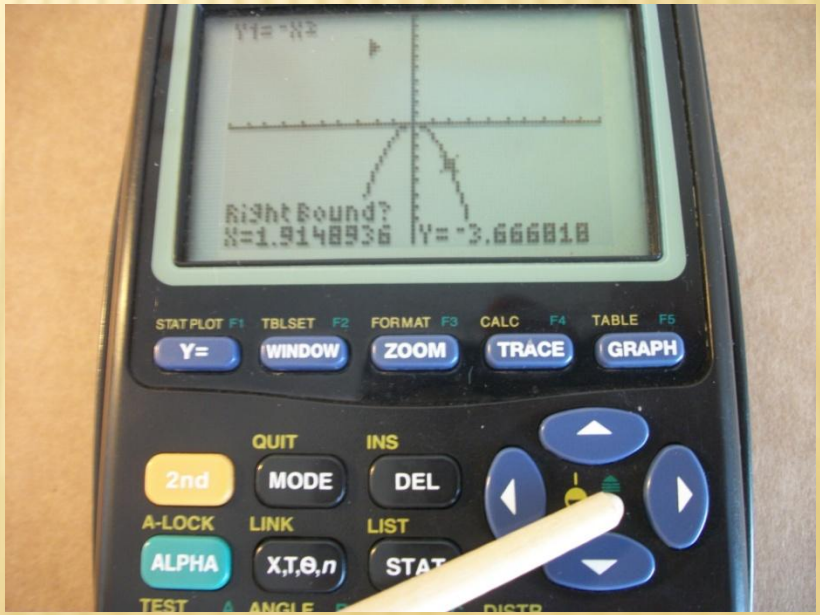


- Here you will go down to #4, or “maximum” because this parabola is cupped down and you are trying to find the highest point. Then hit “ENTER”.



- Pick your left boundary by moving the cursor to the left of the vertex.
- Hit “ENTER”.
- Pick your right boundary by moving your cursor to the right of the vertex.
- Hit “ENTER”





- When you are asked to Guess, find your vertex by moving the cursor as close to the maximum point as possible.
- The answer will be given to you in X and Y values.
- The maximum is (0,0).